

Short answers to review sheet for sections 4.7, 5.1, 5.2, 5.3, 5.4, 5.5

(1)  $x = \sqrt{500}$ .

(2)  $x = 1/\sqrt{2}$ .

(3)  $x = 125, p = 875$ .

(4)  $f(x) = -(1/4)\cos(2x) + 5x + 13/4$ .

(5)  $f(x) = 1 + \sqrt{1+x^4}$ .

(6)  $(1/2)\ln(x^2 + 10) + C$ .

(7)  $\frac{x^5}{5} + \frac{3x^4}{4} + \frac{x^2}{2} + 3x + C$ .

(8)  $[15x + 8e^x + (1/2)e^{2x}]_2^3$ .

(9)  $[10x^{1/2} + (8/3)x^{3/2}]_1^3$ .

(10)  $1/8$  and  $-(1/2)\cos(x^2) + C$ , respectively.

(11)  $(8/5)2^{5/4}$ .

(12) 
$$\begin{aligned}\int_3^5 f(x) dx &= \int_3^9 f(x) dx - \int_5^9 f(x) dx = 5 - 8 = -3, \\ \int_9^{10} f(x) dx &= \int_5^{10} f(x) dx - \int_5^9 f(x) dx = 2 - 8 = -6, \\ \int_3^{10} f(x) dx &= \int_3^5 f(x) dx + \int_5^{10} f(x) dx = -3 + 2 = -1.\end{aligned}$$

(13)  $(1/2)[(9/4)^3 + (11/4)^3 + (13/4)^3 + (15/4)^3 + (17/4)^3 + (19/4)^3]$ .

(14)  $(2^2 + 4)(1) + (3^2 + 4)(4) + (7^2 + 4)(2)$ .